PORSF
11.3.18.1 V7

NOTES:

1. These plans were prepared for new breasting and mooring dolphins using structural steel construction. The design shown on these plans is to be used in lieu of the steel and concrete gravity type dolphins shown on the reference plans.

2. The reference plans are to be used for construction of the other parts of the project such as the new catwalks.

3. The following notes and specifications have been adapted from the reference plans.:

GENERAL REQUIREMENTS

1. All materials and workmanship shall conform to the "State of Oregon's Structural Specialty Code," 1990.

2. Contractor shall be responsible for all construction methods, techniques, sequencing, and safety required for the construction.

PROJECT/SITE CONDITIONS

1. Contractor shall verify all existing conditions. If existing conditions differ from those shown, the Owner's Representative shall be notified prior to continuance of the work.

2. Contractor shall be responsible to work around or relocate all obstructions during the demolition and the installation of new or replacement materials.

3. Smoking will be prohibited for all personnel on the project site.

4. Heavy construction equipment or trucks will not be allowed onto the existing wharf.

TEMPORARY CONSTRUCTION FACILITIES

1. Contractor shall be responsible for design and construction of all temporary shoring, bracing, etc required for the construction.

FIRE PREVENTION AND PROTECTION

1. Contractor shall comply with all applicable state and local fire prevention regulations and ordinances. Where these regulations do not apply, applicable parts of NFPA No. 241 "Standard for Safeguarding of Building Construction, Alteration, and Demolition Operations" shall be followed.

2. Cutting and welding safety procedures shall be in accordance with NFPA No. 51B "Standard for Fire Prevention in Use of Cutting and Welding Operations." Prior to any cutting or welding, the area within 35 feet of the cutting/welding operation shall be made firesafe, examined, and approved by the Owner's Representative responsible for authorizing cutting and welding operations.

3. A cutting/welding permit shall be obtained each day for each cutting/welding operation from the Owner's Representative responsible for authorizing cutting or welding operations. Cutting or welding without a permit shall not be allowed.

4. Contractor shall provide fully charged and operable fire extinguishers at each cutting/welding operation prior to any cutting or welding.

INSPECTION AND TESTING

1. The following special inspections shall conform to section 306 of the "State of Oregon Structural Specialty Code." 1990.

- Pile installation
- Reinforcing steel placement
- Concrete placement
- Welding

2. All inspections and testing with related sampling, whether required by the construction documents or by the governing building code shall be performed by an independent testing agency retained and paid for by the Owner to perform all inspections and tests.

3. Contractor shall fully cooperate with and provide assistance to Owner's inspectors and provide proper notices of need for inspections.

4. Inspection/testing reports shall be submitted to the Owner's Representative giving observations and results of tests, and indicating compliance or noncompliance with specified standards and with the construction documents. Test results or inspections which indicate noncompliance shall be followed by appropriate inspection/tests or corrective work to show compliance as specified.

DEMOLITION AND DISMANTLING

1. Contractor shall comply with all applicable state and local regulations and ordinances concerning demolition operations and refuse removal. Where these regulations do not apply, applicable parts of ANSI A10.6 "Safety Required for the Construction."

2. Contractor shall be responsible for all demolition methods, techniques, sequencing, and safety required for the construction.

3. Contractor shall take all necessary precautions during demolition against damaging systems, especially structural and utilities, not intended to be demolished. Contractor shall take all necessary precautions to protect structures, utilities, and other facilities from damage caused by debris, lateral movement, and other hazards created by demolition operations.

4 If adjacent structures appear to be endangered by demolition operations, the Owner's Representative shall be notified prior to continuance of the work.

PILING

1. The design shown on these plans is based on a test piling driven on September 18, 1991

a.) The piling was an HP14 x 102 with a length of 100 feet. The piling was driven with a Vulcan 010 hammer with a rated energy of 32,500 foot-pounds. The final set was 123 blows per foot at a tip elevation of -52 feet C. R. D.

b.) The ultimate bearing capacity for this test pile is 329,000 pounds (164 S. T.) based on the formula: $P = 2e/(s+.1)$ where e = rated hammer energy in foot pounds and s = inches penetration per hammer blow.

c.) After driving, the piling was tested for "uplift" capacity by pulling vertically using a load measuring dynamometer between the piling and the derrick load hook. The piling did not move at a vertical load of 90 S. T. as measured by the dynamometer (maximum load allowed on derrick) held for a 10 minute period.

2. Steel piling shall be AISC "HP" shapes and A. S. T. M. A36 material.

3. All steel piling shall be driven to "refusal." At "refusal" the piling shall be basically stopped with a blow count of at least 10 blows per inch using a hammer rated at 32,500 foot-pounds energy.

4. The steel piling structures have been designed for maximum piling loads as follows:

- Plumb and batter piles . . . 105 S. T bearing
- Plumb piles . . . . . 45 S. T. uplift

5. After driving all the vertical piling in a dolphin group, two vertical pilings shall be selected and "pull" tested. A vertical load of 55 S. T. shall be applied and held for 5 minutes. During this period the piling shall not move. If the piling moves it shall be re-driven and pull tested again. In addition, adjacent vertical pilings shall be "pull" tested after the re-tested piling has been satisfactorily tested. The purpose of these tests is to provide assurance the vertical pilings will meet the design requirements.

EXCAVATIONS & FORMWORK

1. Excavations shall be shored as required to prevent subsidence or damage to adjacent existing structures, pavement, utilities, etc.

2. Construction, shoring, and bracing of formwork shall be in accordance with chapter 4 of ACI 301-89 "Specifications for Structural Concrete for Building," and ACI 347-78(84) "Recommended Practice for Concrete Formwork."

3. Contractor shall be responsible for design and construction of all formwork and shoring.

REINFORCING STEEL

1. Reinforcing steel shall be ASTM A615 Grade 60 deformed bars.

2. Fabrication and placement of reinforcing steel shall be in accordance with CRSI MSP-1-90 "Manual of Standard Practice" and Chapter 5 of ACI 301-89 "Specifications for Structural Concrete for Buildings"

3. Unless otherwise indicated, minimum clearance for reinforcing steel and welded wire fabric shall be 3 inches for concrete cast against earth; for concrete exposed to earth or weather, 1-1/2 inches for #5 and smaller bars, 2 inches for #6 and larger bars. Install with proper bar supports prior to concrete placement.

CONCRETE

1. Cast-in-place concrete shall have a compressive strength of 3000 PSI @ 28 days. Slump shall be 4" plus or minus 1". Air entrainment shall be 5% plus or minus 1". Minimum cement content shall be 5 sacks per cubic yard.

2. Concrete material and quality shall be in accordance with Chapters 3 and 5 respectively of ACI 318-89 "Building Code Requirements for Reinforced Concrete."

3. Transporting of ready-mix concrete shall be in accordance with ASTM C94 "Standard Specification for Ready-Mixed Concrete" and concrete placement and curing shall be in accordance with ACI 301-89 "Specifications for Structural Concrete for Buildings."

PATCHING MORTAR

1. Patching mortar shall be polymer modified type "Metalex" as manufactured by Adhesive Engineering Co. or "Sikatop 122" as manufactured by Sika Corp.

2. Install/place in accordance with ACI 503.4-79(86) "Specification for Repairing Concrete with Epoxy Mortars" and the manufacturer's written instructions and specifications.

STRUCTURAL STEEL AND METAL FABRICATIONS

1. Steel shapes, plates, and bars shall be ASTM A36.

2. Steel shaped tubing shall be ASTM A500 Grade B.

3. Steel pipe shall be ASTM A53 Grade B.

4. Fabrication and erection shall be in accordance AISC "Specification for Structural Steel Buildings," 1989 and AISC "Code of Standard Practice for Steel Buildings and Bridges," 1986.

5. Standard bolts shall be ASTM A307 Grade A. Galvanize all bolts, nuts, and washers in accordance with ASTM A153.

6. Welding shall be in accordance with AWS D1.1-90 "Structural Welding Code-Steel." Welding filler metal shall be AWS 15.1 or 15.5 E70XX Electrodes, ASW A5.18 ER70S-X, AWS A5.20 E7XT-X. Welding filler metal at braces and link beams shall be low hydrogen type. Welders shall be AWS certified.? Submit copy of all welding procedures and welder certifications to the Owner's Representative prior to any welding.

7. Surfaces to be welded shall be protected from painting by use of masking. Inadvertent over-spray on surfaces to be welded shall be removed by wire brush.

WOOD FRAMING

1. Wood timber members (12x and larger) shall be Douglas Fir No. 1 rough size and graded in conformance with WWPA/WCUB grading rules

2. Other wood framing members shall be Douglas Fir No. 2 S4S and graded in conformance with WWPA/WCUB grading rules.

3. All wood framing 6x and smaller shall be pressure treated in accordance with AWPA C2 and AWPB UP-2 having a retention of 0.25 lb/cu ft preservative shall be EPA approved AWPA P5 waterborne salts type.

TIMBER FENDER PILING

1. Timber fender piling shall be ASTM D25 clean peeled Pacific Coast Douglas Fir untreated - minimum- 18" dia. butt.

2. Piling shall be driven to about 15' penetration.

3. Care shall be taken not to overdrive the piling, particularly if the piling hits "refusal."

PAINTING

1. Except for the platform on top of the dolphin, the steel shall be uncoated.

2. The top of the steel platform including the handrails and bitt shall be given a prime coat of red oxide such as Rodda 2447 and two finish coats of white enamel such as Rodda Acrylic Tank and Steel Enamel. The walking surface shall be sprinkled with #16 silica grit while the first coat is "tacky" for non-skid.

3. The outer (toward the river) faces of the pilings from the top down to the fender support plate shall be coated the same as the platform top.

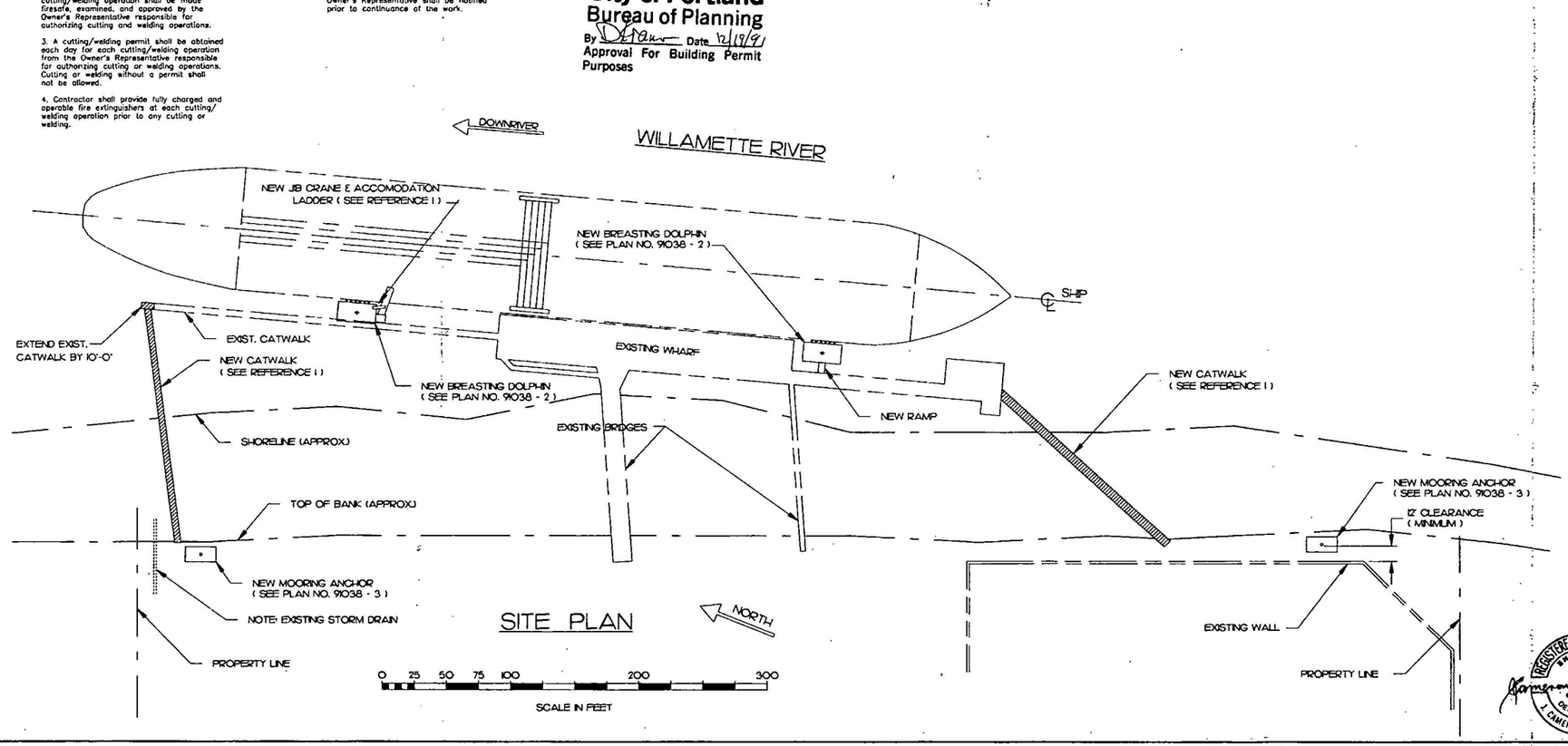
4. The bitt on the mooring anchor shall be coated the same as the top of the breasting dolphin.

5. Care should be taken not to "overspray" unpainted surfaces. The lines between painted and unpainted surfaces shall be carefully cut-in.

6. The manufacturer's recommendations for surface preparation and cleaning shall be followed.

REFERENCES:

1. "MOORING ADDITION" - MOFFET,NICHOL & BONNEY,INC. PLAN NO. P4363 , DRAWING NOS. 1,2, & 3.



PLAN LIST		
PLAN NO.	REV	PLAN TITLE
91038-1	--	PLAN LIST, NOTES, & SITE PLAN
91038-2	-	BREASTING DOLPHIN ARRANGEMENT
91038-3	-	MOORING ANCHOR ARRANGEMENT
91038-4	-	BREASTING DOLPHIN FENDER DETAILS

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REGISTERED PROFESSIONAL ENGINEER 10394 OREGON DEC. 14, 1979 J. CAMERON McKERNAN

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TITLE:
GATX TERMINAL MOORING
PLAN LIST, NOTES & SITE PLAN

PLAN NO: 91038 - 1 REV: -

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